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«مدیریت پژوهشی»

عنوان طرح پژوهشی:

**"A pooled analysis of diagnostic value of ^{99m}Tc -
ubiquicidin (UBI)scintigraphy in detection of an
infectious process"**

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گزارش تحقیق :

Purpose: Although the data are promising from limited studies with technetium-99m ubiquicidin scintigraphy in detection of infection in humans, these studies have had a limited sample size. This study was conducted to provide a systematic review and meta-analysis of the reported diagnostic accuracy of 99mTc-UBI scintigraphy in detection of an infectious process.

Materials and methods: The PubMed/MEDLINE, Web of Science, EMBASE, and Google Scholar literature databases were systematically searched to find the relevant human studies on 99mTc-UBI scintigraphy. For each eligible study, the true-positive, false-positive, true-negative and false-negative findings at 99mTc-UBI scintigraphy were recorded, and the overall statistical parameters were acquired.

Result: Ten studies carried out from 2004 to 2010 were included in the analysis. The pooled data sensitivity was 97.5% with the 95% confidence interval of 94.9%–99.0%. The pooled specificity was still as high as about 89%. The range of reported specificity was from 80 to 100%. The overall accuracy was 93.7 % (95% CI: 91.2%–95.7%).

Conclusion: The study demonstrated that 99mTcUBI scintigraphy can be used to identify an infectious process with admirable accuracy in early views; however, further investigations are recommended.

Key words: 99mTc-UBI scan, antimicrobial peptides, infection

۲ – بخش اصلی

Introduction

The prompt and timely clinical diagnosis of infection can be challenging, but it is associated in a crucial way with a patient's care management. Current available radiopharmaceuticals are often unable to differentiate between sterile inflammation and infection. Several pharmaceuticals labeled with various radioisotopes, such as liposomes labeled with ^{99m}Tc (1), immunoglobulins (2, 3), the avidin–biotin system (4), antigranulocyte antibodies and antibody fragments, chemotactic peptides, cytokines, interleukins, platelet factor-4, and Ciprofloxacin labeled with ^{99m}Tc (5) have been applied, but an optimal radiotracer has not yet been established. Therefore, autologous leukocytes labeled with ^{111}In or ^{99m}Tc -HMPAO are still considered the gold standard despite their limitations (6). Consequently, the practice of directly targeting infectious agents with radiolabeled antibiotics or antimicrobial peptides was introduced (7), and a number of radiolabeled peptides have been assessed (8, 9). Among the several radiolabeled peptides options, technetium- ^{99m}Tc labeled cationic antimicrobial peptides originating from ubiquicidin (UBI) are increasingly used in the diagnostic evaluation of patients (10, 11). Although results from limited preclinical and pilot studies in patients are promising (12, 13), they had a limited sample size. So we have performed a meta-analysis of diagnostic studies regarding the accuracy of ^{99m}Tc -UBI 29-41 scintigraphy in the identification of infection.

Materials and methods

Identification and eligibility of pertinent investigations

The attempt was made to identify all investigations regarding the diagnostic accuracy of ubiquicidin (UBI) labeled with technetium 99m (99mTc) for detection of infection in patients.

All pertinent investigations were included, not considering the type of UBI used and regardless of the location of disease. The PubMed/MEDLINE, Web of Science, EMBASE, and Google Scholar literature records were systematically searched for publications from January 1965 up to September 2012. The search strategy was based on the terms “99mTc-ubiquicidin scintigraphy,” “99mTc-UBI scintigraphy,” “antimicrobial peptides scan using UBI,” “ubiquicidin scan,” and “UBI scan.” Experimental investigations on animals were excluded.